

REMARKS

Applicant has reviewed the Office Action dated February 19, 2003, and the references cited therewith.

Claims 1 and 16 are amended; as a result, claims 1 – 24 remain pending in this application.

§102 Rejection of the Claims

In the Office Action, claims 1 – 7, 9, 10 and 16 – 20 were rejected under 35 USC § 102(b) as being anticipated by Weijand et al. (U.S. Patent No. 5,999,857). The rejections are traversed and reconsideration is respectfully requested.

A reflected impedance telemetry system such as described in Weijand and the references cited therein is fundamentally different from the passive telemetry system described and claimed by applicant in the present application. In a reflected impedance telemetry system, an external device transmitter and an implantable device form an inductively coupled circuit so that the transmitter “sees” whatever impedance the implantable device may put into the circuit. The impedance put into the circuit by the implantable device thus loads the external device transmitter and may be said to be “reflected” back to the transmitter. By time-varying the impedance in accordance with a message signal, the implantable device is thus able to transmit data back to the external device. It is the loading of the external device’s transmitter by the reflected impedance that enables the external device to sense changes in the impedance put into the circuit by the implantable device. A basic description of reflected impedance telemetry is found in Schulman (U.S. Patent No. 4,223,679) which was referenced by Silvian (U.S. Patent No. 5,264,843), the latter patent being referenced by Silvian (U.S. Patent No. 5,466,246). As best understood by applicant, reflected impedance telemetry is implemented with an oscillator incorporated into the external device transmitter which then drives the inductively coupled circuit. The frequency and amplitude of the oscillator output is partially determined by the impedance put into the inductively coupled circuit by the implantable device so that the external device may sense changes in the reflected impedance by sensing changes in the frequency and/or amplitude of the oscillator output.

In a reflected impedance telemetry system as just described, it is the loading of the transmitter's oscillator by the reflected impedance which allows data transmission to occur. This is in contradistinction to the structure described and claimed by applicant in which far-field radiation of a radio-frequency carrier is employed. In applicant's system and method, the carrier signal is radiated from the transmitter antenna to the receiver antenna where it is reflected back with no loading of the transmitter by the receiver antenna. "No loading" in this context means that the frequency and amplitude of the transmitter's output signal to its antenna are unaffected by changes in the impedance of the receiver antenna, and such no loading of the transmitter by an antenna in this case is inherent in the physics of far-field radiation. In applicant's system and method, rather than sensing changes in the output of a transmitter in order to detect changes in the impedance of the implantable device as is done in reflected impedance telemetry, the phase-modulated and reflected carrier signal is received by an antenna of the external device and its phase then determined in order to detect changes in the impedance of the implantable device.

As recited in claims 1 and 16, applicant has claimed a system and method for transferring data in which a tuning circuit adjusts the impedance of an antenna in a manner that phase modulates a carrier signal reflected by the antenna. Applicant does not believe that a reflected impedance telemetry system as described in the prior art of record teaches or suggests the use of phase modulation of a reflected carrier signal to transmit data. As noted above, reflected impedance telemetry systems depend upon the external device being loaded by the reflected impedance, and applicant contends that this is not phase modulation of a reflected carrier. None of the prior art references of record teach or suggest any means for detecting the phase of a reflected carrier signal, and it is not even apparent to applicant how one would go about modifying such a system to do so. In any event, in order to clearly distinguish applicant's passive telemetry system and method from a reflected impedance telemetry system, claims 1 and 16 have been amended herein to recite that the implantable device antenna reflects the radio-frequency carrier signal without loading the transmitter of the external device. As aforesaid, no loading of the transmitter by the implantable device antenna is a consequence of the carrier signal being far-field radiation and is thus inherently disclosed by the specification as originally filed.

Applicant further finds no teaching or suggestion in Weijand for any of the limitations recited by dependent claims 2-7, 9, 10, and 17-20 in the context of a system or method recited by independent claims 1 or 16. Applicant repeats the assertion that no teaching or suggestion is found in Weijand for the use of far-field radiation to transfer data. Reflected impedance telemetry must necessarily use the induction field (a.k.a., the near-field) generated by an antenna rather than the far-field in order for impedance to be reflected. Withdrawal of the rejections of claims 1-7, 9, 10, and 16-20 is thus respectfully requested.

§103 Rejection of the Claims

In the Office Action, claims 8, 11 – 15 and 21 - 23 was rejected under 35 USC § 103(a) as being unpatentable over Weijand et al. (U.S. Patent No. 5,999,857). *Claim 8*

With respect to claim 8, the office action states that Weijand discloses all of the recited limitations but does speak directly to the use of QPSK. Applicant finds no teaching or suggestion in Weijand for the use of QPSK in the present context. As explained above, Weijand does not teach or suggest transferring data by modulating a reflected carrier, and it is not apparent to applicant how one would modify a reflected impedance telemetry system to use any kind of phase-shift keying, including QPSK. The rejection of claim 8 is thus traversed and reconsideration is respectfully requested.

Claim 11 and 21

With respect to claims 11 and 21, the office action states that Weijand discloses all of the recited limitations but does speak directly to a clock signal embedded in the RF carrier signal. Weijand does not teach or suggest transferring data by phase modulating a reflected carrier, and applicant finds no teaching or suggestion in Weijand for a clock signal embedded in the RF carrier signal in that context. The rejections of claims 11 and 21 are thus traversed and reconsideration is respectfully requested.

Claims 12- 15, 22 and 23

With respect to claims 12-15, 22, and 23, the office action states that Weijand discloses all of the recited limitations but does speak directly to the use of differential PSK or QPSK. As

explained above, Weijand does not teach or suggest transferring data by modulating a reflected carrier, and it is not apparent to applicant how one would modify a reflected impedance telemetry system to use any kind of phase-shift keying, including differential PSK or QPSK. The rejections of claims 12-15, 22, and 23 are traversed and reconsideration is respectfully requested.

Timely Traversal of Assertions of Things Known to One of Skill in the Art

Applicant generally traverses the assertion of things "known to one of skill in the art" as a form of Official Notice and requests a reference to support such assertions pursuant to MPEP 2144.03, or their withdrawal in the next official communication.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney 847-432-7302 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,
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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop AF, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 19 day of June, 2003.

GREG HANSON
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